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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/521,529 | 06/27/2005 | Per Thomas Moe | TS6375 US | 8783 |

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| EXAMINER |
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MEHTA, MEGHA S

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| ART UNIT | PAPER NUMBER |
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1793

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07/22/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|-----------------------------------|--|
| Office Action Summary | Application No. 10/521,529 | Applicant(s) MOE ET AL. | |
| | Examiner MEGHA MEHTA | Art Unit 1793 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 June 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 4-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 4-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 25, 2009, has been entered.

Status Identifiers

2. Please note that the status identifier for claim 5 should be "Previously presented".

Claim Objections

3. Claim 1 is objected to because of the following informalities: The claim ends with "tubular end; and." Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. Claims 1, 2 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 4,669,650 Moe in view of US 5,721,413 Moe.

Regarding claim 1, '650 teaches a method for interconnecting tubulars **1, 2** by forge welding (column 1, lines 5-6) in which the sloping configuration is such that when the tubular ends are heated during the forge welding process the heated tubular ends deform as a result of thermal expansion into a substantially longitudinally oriented cylindrical shape, wherein the sloping angle of the inner and outer walls of the tubular ends is selected such that the ratio between the average diameter D(t) of the tip of the tubular end and the average diameter D(b) of the base of the tubular end is related to an estimated temperature difference between said tip and

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base of the tubular during the forge welding process and a thermal expansion co-efficient of the steel grade or grades of the tubular end (column 3, lines 11-15 and 24-26).

Moe '650 does not teach the end configuration. Moe '413 teaches a method of forge welding to join two tubular pieces including shaping the tubular ends **3**, **4** that are to be welded together into a shaped configuration wherein each tubular includes an end face that is parallel to a plane normal to the axis of the tubular and defined by the wall thickness of the tubular, wherein the end face of the one of the tubulars **3** has an annular convex shape and the end face of the other tubular **4** has an annular concave shape that is complementary to and intermeshes with said convex shape (figure 3), wherein the convex shape has a sloping configuration such that the average diameter $D(t)$ of the tip of the convex shape is different than the average diameter $D(b)$ of the tubular wall as measured at the center of the wall thickness, as shown in the figure above.

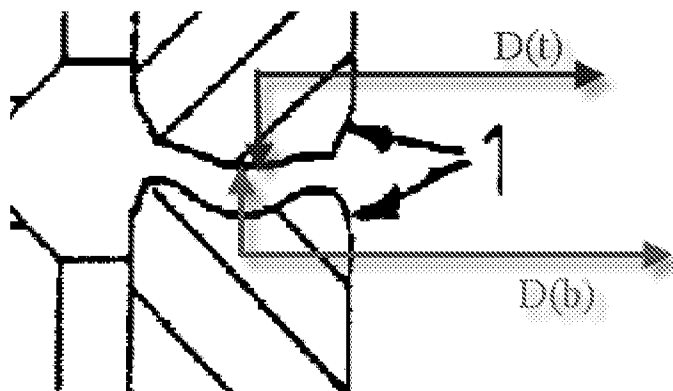


Figure 3 of '413

It would have been obvious to include the concave and convex shapes of the end faces of '413 in the method of '650 because the concave and convex shapes help secure one piece to another and reduce sliding and shifting of the pieces relative to each other during the welding process.

Regarding claim 2, '650 teaches the method of connecting tubulars. Moe '413 teaches the end face configuration. Moe '413 also teaches $D(t)$ as just smaller than $D(b)$ as shown above, but

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does not teach the exact ratio. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to determine the optimum ratio of $D(t)/D(b)$. “[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation,” (MPEP 2144.05 Section II).

Regarding claim 4, Moe ‘650 teaches the tubular ends machined to a reduced wall thickness in the welding zone (column 3, lines 24-25).

5. Claims 5-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 4,669,650 Moe in view of US 5,721,413 Moe and further in view of JP 03-243286 Masakatsu et al.

Regarding claim 5, ‘650 teaches the method of connecting tubulars. Moe ‘413 teaches the end face configuration. Neither ‘650 nor ‘413 teach the composition of the pipes or the cladding. Masakatsu teaches a method for joining clad tubes where the tubulars comprising a relatively lower grade steel base pipe and a higher grade steel cladding on the inner and/or outer surface of the base pipe and the end faces are shaped such that when the tubular ends are pressed together the end faces of the cladding(s) touch each other before the end faces of the base pipe ends touch each other (p.2 line 46-page 3, line 1 and figure 2). It would have been obvious to include the composition and configuration of Masakatsu in the method of Moe because this cladding and configuration protects the pipes from final machining during the welding and polishing process.

Regarding claim 6, Moe ‘650 teaches wedge shaped ends (column 3, line 11). Neither ‘650 nor ‘413 teach claddings. Masakatsu teaches a method for joining clad tubes where the tips are formed by claddings (figure 2). It would have been obvious to include the composition and configuration of Masakatsu in the method of Moe because this cladding and configuration protects the pipes from final machining during the welding and polishing process.

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Regarding claim 7, '650 teaches the method of connecting tubulars. Moe '413 teaches the end face configuration. Neither '650 nor '413 teach the cladding. Masakatsu teaches a method for joining clad tubes where the adjacent end portions of the adjacent base pipes are covered with the clad metal (figure 2). This configuration is capable of allowing further machining of said end portions without exposing the base pipes. It would have been obvious to include the composition and configuration of Masakatsu in the method of Moe because this cladding and configuration protects the pipes from final machining during the welding and polishing process.

Regarding claim 8, Moe '650 teaches during at least part of the forge welding operation a flushing gas is flushed around the welding zone and at least part of the flushing gas is injected into the welding zone from the uncladded side of the tubular, such that the injected flushing gas can continue to reach the ends of the still spaced base pipes after the claddings have touched each other (column 2, lines 56-65).

Regarding claim 9, Moe '650 teaches the flushing gas as a reducing flushing gas (column 2, lines 65-67).

6. Claims 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 4,669,650 Moe in view of US 5,721,413 Moe and JP 03-243286 Masakatsu et al as applied to claim 9 above, and further in view of US 3,941,299 Godfrey.

Regarding claims 10-12, '650 teaches the method of connecting tubulars. Moe '413 teaches the end face configuration. Masakatsu teaches cladding. None of '650, '413 or Masakatsu teaches the composition of the flushing gas. Godfrey teaches a method of brazing metal pieces together where a non-explosive flushing gas mixture comprises more than 90% by volume of nitrogen and at least 2% by volume of hydrogen (column 2, lines 55-59). It would

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have been obvious to substitute welding for brazing because the substitution of one known element for another would have yielded predictable results to one of ordinary skill in the art at the time of the invention. It would have been further obvious to include the flushing gas of Godfrey in the method of Moe, Moe and Masakatsu because a non-reactive flushing gas prevents oxidation during the welding process.

Response to Arguments

7. Applicant's arguments with respect to claims 1-2 and 4-12 have been considered but are moot in view of the new ground(s) of rejection of Moe '650 in view of Moe '413.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MEGHA MEHTA whose telephone number is (571)270-3598. The examiner can normally be reached on Monday to Friday 7:30 am to 5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jessica Ward can be reached on 571-272-1223. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Megha Mehta/
Examiner, Art Unit 1793

/Jessica L. Ward/
Supervisory Patent Examiner, Art Unit 1793